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Thomas Andrew Strasser

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27774

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10/05/2005

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EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/099,890

Applicant(s)

STRASSER ET AL.

Examiner

Shi K. Li

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 12 recites the limitation "wherein the transponders in each of the transponder pairs operate at a different channel wavelength" in lines 1-2 of the claim. The specification as originally filed does not describe the limitation in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

3. Claim 41 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 41 recites the limitation "wherein the network management element employs a routing and wavelength assignment algorithm" in lines 1-2 of the claim. However, the instant specification as originally filed does not described the limitation in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-24 and 62-64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "In a WDM optical communication system that includes a plurality of nodes interconnected by communication links, a node, comprising" in lines 1-2 of the claim. It is unclear whether claim 1 claims a "WDM optical communication system" or a "node" that is included in said WDM optical communication system. The dependent claims of claim 1 recites "In the system of claim 1, a node wherein" or "In the system of claim 1, a node further comprising", etc. It is unclear whether the node referred to in the dependent claims is the same node as referred to in claim 1 or it is another node in the WDM optical communication system.

6. Claims 59-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 59 recites "In a WDM optical communication system that includes a plurality of nodes interconnected by communication links, a node, comprising" in lines 1-2 of the claim. It is unclear whether claim 59 claims a "WDM optical communication system" or a "node" that is included in said WDM optical communication system. The dependent claims of claim 59 recites "In the system of claim 59, a node wherein". It is unclear whether the node referred to in the dependent claims is the same node as referred to in claim 1 or it is another node in the WDM optical communication system.

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7. Claims 6 and 23-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
8. Claim 6 recites the limitation "the first plurality of transmitters" in lines 4-5 of the claim. There is insufficient antecedent basis for this limitation in the claim.
9. Claim 23 recites the limitation "the first plurality of transmitters" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.
10. Claim 24 recites the limitation "the transmitters" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. (U.S. Patent 6,697,546 B2) in view of Galou et al. (U.S. Patent Application Pub. 2004/0085345 A1).

Regarding claims 1, 25, 59 and 61, Ibukuro et al. discloses in FIG. 52 a WDM optical communication system that includes a plurality of nodes interconnected by communication links. Ibukuro et al. teaches in FIG. 42 through 51 nodes that can be used for nodes in FIG. 52. For example, Ibukuro et al. discloses in FIG. 49 a plurality of transponders (the transponder between a 16x16 switch and the 8x8 switch) for receiving different channel wavelengths from the

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demultiplexer. The 8x8 switch selectively direct different channel wavelengths to different ones of the transponders. The difference between Ibukuro et al. and the claimed invention is that Ibukuro et al. does not teach an arrangement for transferring data identifying channel wavelengths at which the transponders operate. Galou et al. teaches a network management system for providing configuration management and network inventory management (see paragraph [0112] through [0134]). One of ordinary skill in the art would have been motivated to combine the teaching of Galou et al. with the communication system of Ibukuro et al. because it allows effective management of the system. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a network management system, as taught by Galou et al., in the communication system of Ibukuro et al. because it allows effective management of the system.

Regarding claim 3, Galou et al. teaches that circuit pack such as transponder includes CLEI code and model number for identifying equipment information including channel wavelength.

Regarding claims 5-6, Ibukuro et al. teaches in col. 2, lines 20-21 that the plurality of input ports of switch are switchable to any of the plurality of output ports.

Regarding claims 7 and 9, Ibukuro et al. teaches in col. 19, line 18-20 that FIG. 49 is an application of FIG. 43 which uses redundant transponders for protection (see col. 17, lines 3-7).

Regarding claims 20 and 26, Galou et al. teaches in FIG. 11 and paragraph [0407] that model number can be manually modified.

Regarding claim 23, Galou et al. teaches in FIG. 10 that circuit packs such as transponders are located in slots.

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Regarding claims 24 and 48-49, Galou et al. teaches in paragraph [0765] that data identifies channel wavelength.

Regarding claim 38-40, Galou et al. teaches in paragraphs [0348] and [0349] that an alert is generated if the configuration is not compatible.

Regarding claim 42, Galou et al. teaches in paragraphs [0135]-[0151] fault management.

Regarding claim 43, Galou et al. teaches in paragraph [0772] optical power transmitted.

Regarding claims 44-45, Galou et al. teaches in paragraph [0313] data rate of a module.

Regarding claim 46, Ibukuro et al. teaches that each transponder communicates with a port of the optical switch.

Regarding claim 50, Ibukuro et al. teaches in FIG. 43 and FIG. 49 a k:2 protection scheme.

Regarding claim 55, Ibukuro et al. teaches in col. 19, line 18-20 that FIG. 49 is an application of FIG. 43 which uses redundant transponders for protection (see col. 17, lines 3-7).

Regarding claim 65, Ibukuro et al. teaches in FIG. 42 and FIG. 44 k:1 (i.e., 1:N) protection which is also a shared protection scheme.

13. Claims 1-3, 20, 24-26, 38-40, 42-45, 48-49, 59 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milton et al. (U.S. Patent 6,084,694) in view of Jiang et al. (U.S. Patent 6,411,412 B1) and Galou et al. (U.S. Patent Application Pub. 2004/0085345 A1).

Regarding claims 1, 25, 59 and 61, Milton et al. discloses in FIG. 1 an optical communication system comprising a plurality of nodes. Milton et al. discloses in FIG. 4 a structure for a node comprising a plurality of payload interfaces and an optical cross-connect for directing wavelength channels to the payload interfaces. The differences between Milton et al.

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and the claimed invention are (a) Milton et al. does not teach transponders and (b) Milton et al. does not teach an arrangement for transferring data identifying channel wavelengths at which the transponders operate. Jiang et al. teaches in FIG. 3 that for a dropped channel, a payload interface comprises a transponder and a receiver. One of ordinary skill in the art would have been motivated to teaching of Jiang et al. with the optical communication system of Milton et al. because a transponder allows the conversion from a WDM wavelength in the 1.5  $\mu\text{m}$  band to legacy SONET equipment that operates at 1.3  $\mu\text{m}$  and provides a smooth transition from SONET network to WDM system. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include transponder in payload interface, as taught by Jiang et al., in the optical communication system of Milton et al. because a transponder converts a WDM wavelength in the 1.5  $\mu\text{m}$  band to a 1.3  $\mu\text{m}$  wavelength at which legacy SONET equipment operates and, therefore, provides a smooth transition from SONET network to WDM system.

The combination of Milton et al. and Jiang et al. still fails to teach an arrangement for transferring data identifying channel wavelengths at which the transponders operate. Galou et al. teaches a network management system for providing configuration management and network inventory management (see paragraph [0112] through [0134]). One of ordinary skill in the art would have been motivated to combine the teaching of Galou et al. with the modified communication system of Milton et al. and Jiang et al. because it allows effective management of the system. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a network management system, as taught by Galou et al., in the



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modified communication system of Milton et al. and Jiang et al. because it allows effective management of the system.

Regarding claim 2, Jiang et al. teaches receivers coupled to the transponders.

Regarding claim 3, Galou et al. teaches that circuit pack such as transponder includes CLEI code and model number for identifying equipment information including channel wavelength.

Regarding claims 20 and 26, Galou et al. teaches in FIG. 11 and paragraph [0407] that model number can be manually modified.

Regarding claims 24 and 48-49, Galou et al. teaches in paragraph [0765] that data identifies channel wavelength.

Regarding claim 38-40, Galou et al. teaches in paragraphs [0348] and [0349] that an alert is generated if the configuration is not compatible.

Regarding claim 42, Galou et al. teaches in paragraphs [0135]-[0151] fault management.

Regarding claim 43, Galou et al. teaches in paragraph [0772] optical power transmitted.

Regarding claims 44-45, Galou et al. teaches in paragraph [0313] data rate of a module.

14. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. and Galou et al. as applied to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 above, and further in view of Elliot et al. (U.S. Patent 6,587,470 B1).

Ibukuro et al. and Galou et al. have been discussed above in regard to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65. The difference between Ibukuro et al. and Galou et al. and the claimed invention is that Ibukuro et al. and Galou et al. do not teach that each transponder pair is located in adjacent slots. Elliot et al. teaches in FIG. 12 to group

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working modules and associated protection modules together. One of ordinary skill in the art would have been motivated to combine the teaching of Elliot et al. with the modified communication system of Ibukuro et al. and Galou et al. because putting similar circuit packs in adjacent slots simplifies backplane design and is convenient for maintenance craftsman to locate associated working and protection circuit packs. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign associated working and protection transponders in adjacent slots, as taught by Elliot et al., in the modified communication system of Ibukuro et al. and Galou et al. because putting similar circuit packs in adjacent slots simplifies backplane design and is convenient for maintenance craftsman to locate associated working and protection circuit packs.

15. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al., Galou et al. and Elliot et al. as applied to claim 10 above, and further in view of Li et al. (U.S. Patent 6,414,765 B1).

Ibukuro et al., Galou et al. and Elliot et al. have been discussed above in regard to claim 10. The difference between Ibukuro et al., Galou et al. and Elliot et al. and the claimed invention is that Ibukuro et al., Galou et al. and Elliot et al. do not teach the wavelength relationship between working and protection transponder. Li et al. teaches in FIG. 1 a two-fiber protection ring. Li et al. teaches in col. 6, line 30-col. 7, line 3 that in a single channel fault, the working channel and protection channel have different wavelength and in a multi-channel fault, such as a fiber cut, the working channel and the protection channel have same wavelength. One of ordinary skill in the art would have been motivated to combine the teaching of Li et al. with the modified communication system of Ibukuro et al., Galou et al. and Elliot et al. because in a fiber

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cut, protection channels are carried by the fiber other than the fiber that used for working channels while in single channel fault, protection channel and working channel are in the same fiber. This arrangement provides maximum efficiency of wavelength channel usage. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use same wavelength for working and protection channels when multi-channel fault occurs and use different wavelength for working and protection channels when single channel fault occurs, as taught by Li et al., in the modified communication system of Ibukuro et al., Galou et al. and Elliot et al. because this arrangement provides maximum efficiency of wavelength channel usage.

16. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. and Galou et al. as applied to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 above, and further in view of Meli (U.S. Patent 6,295,149 B1).

Ibukuro et al. and Galou et al. have been discussed above in regard to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65. The difference between Ibukuro et al. and Galou et al. and the claimed invention is that Ibukuro et al. and Galou et al. do not teach blocking filter. Meli teaches in FIG. 1 to use blocking filter to filter dropped channels. One of ordinary skill in the art would have been motivated to combine the teaching of Meli with the modified communication system of Ibukuro et al. and Galou et al. because blocking filter reduces residual noise from unwanted channels and improves signal quality. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use blocking filters for dropped channels, as taught by Meli, in the modified communication system of Ibukuro et al. and

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Galou et al. because blocking filter reduces residual noise from unwanted channels and improves signal quality.

17. Claims 21-22, 27-34 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. and Galou et al. as applied to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 above, and further in view of May, Jr. et al. (U.S. Patent 6,321,255 B1).

Ibukuro et al. and Galou et al. have been discussed above in regard to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65. The difference between Ibukuro et al. and Galou et al. and the claimed invention is that Ibukuro et al. and Galou et al. do not teach details of the identifying element. May, Jr. et al. teaches in col. 1, lines 34-64 an interface for storing and sending identification information to management system. May, Jr. et al. then teaches in FIG. 3 method for dynamically storing device identification to allow for addition of new fields. One of ordinary skill in the art would have been motivated to combine the teaching of May, Jr. et al. with the modified communication system of Ibukuro et al. and Galou et al. because the interface allows management system to retrieval accurate and up-to-date identification information from device. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an interface for storing and sending up-to-date device identification information, as taught by May, Jr. et al., in the modified communication system of Ibukuro et al. and Galou et al. because the interface allows management system to retrieval accurate and up-to-date identification information from device.

18. Claims 35-37 and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. and Galou et al. as applied to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 above, and further in view of Fee (U.S. Patent 5,995,256).

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Ibukuro et al. and Galou et al. have been discussed above in regard to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65. The difference between Ibukuro et al. and Galou et al. and the claimed invention is that Ibukuro et al. and Galou et al. do not teach a tunable transmitter. Fee teaches in col. 8 to use tunable optical transmitters. One of ordinary skill in the art would have been motivated to combine the teaching of Fee with the modified communication system of Ibukuro et al. and Galou et al. because tunable wavelength permits wavelength agility in an optical communication network. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use tunable transmitters for the transponders, as taught by Fee, in the modified communication system of Ibukuro et al. and Galou et al. because tunable wavelength permits wavelength agility in an optical communication network.

19. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. and Galou et al. as applied to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 above, and further in view of Battou et al. (U.S. Patent Application Pub. 2003/0163555 A1).

Ibukuro et al. and Galou et al. have been discussed above in regard to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65. The difference between Ibukuro et al. and Galou et al. and the claimed invention is that Ibukuro et al. and Galou et al. do not teach a routing and wavelength assignment algorithm. Battou et al. teaches in FIG. 31 and paragraphs [0243]-[0244] that a network management system (NMS) executes routing and wavelength assignment (RWA) function for setting up lightpaths in an optical communication system. One of ordinary skill in the art would have been motivated to combine the teaching of Battou et al. with the modified communication system of Ibukuro et al. and Galou et al. because a RWA

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function allocates wavelengths and sets up lightpaths efficiently as compared to manual allocation. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a RWA function in an NMS, as taught by Battou et al., in the modified communication system of Ibukuro et al. and Galou et al. because a RWA function allocates wavelengths and sets up lightpaths efficiently.

20. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. and Galou et al. as applied to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 above, and further in view of Khusid et al. (U.S. Patent 6,516,105 B1).

Ibukuro et al. and Galou et al. have been discussed above in regard to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65. The difference between Ibukuro et al. and Galou et al. and the claimed invention is that Ibukuro et al. and Galou et al. do not teach an optical backplane. Khusid et al. teaches in FIG. 1 an optical backplane. One of ordinary skill in the art would have been motivated to combine the teaching of Khusid et al. with the modified communication system of Ibukuro et al. and Galou et al. because an optical backplane provides very high data rate among printed circuit boards that is not possible with electrical connections. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use optical backplane, as taught by Khusid et al., in the modified communication system of Ibukuro et al. and Galou et al. because an optical backplane provides very high data rate among printed circuit boards.

21. Claims 51-54 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ibukuro et al. and Galou et al. as applied to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65 above, and further in view of Li et al. (U.S. Patent 6,414,765 B1).

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Ibukuro et al. and Galou et al. have been discussed above in regard to claims 1, 3, 5-7, 9, 20, 23-26, 38-40, 42-46, 48-50, 55, 59, 61 and 65. The difference between Ibukuro et al. and Galou et al. and the claimed invention is that Ibukuro et al. and Galou et al. do not teach switching between protection schemes. Li et al. teaches in FIG. 1 a two-fiber protection ring. Li et al. teaches in col. 6, line 30-col. 7, line 3 that in a single channel fault, a protection channel is in the same fiber using different wavelength and in a multi-channel fault, such as a fiber cut, the protection channel is in the other fiber having same wavelength. One of ordinary skill in the art would have been motivated to combine the teaching of Li et al. with the modified communication system of Ibukuro et al. and Galou et al. because this arrangement provides maximum efficiency of wavelength channel usage. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use different protection schemes based on the failure modes, as taught by Li et al., in the modified communication system of Ibukuro et al. and Galou et al. because this arrangement provides maximum efficiency of wavelength channel usage.

Regarding claims 52-54, Li et al. teaches shared protection scheme.

Regarding claim 58, Li et al. teaches that when a single channel fails, the protection channel is in the same fiber using different wavelength.

#### ***Allowable Subject Matter***

22. Claims 4, 8, 14-16, 19 and 62-64 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl  
20 September 2005

  
**Shi K. Li**  
**Patent Examiner**